



**STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION**

**DIVISION OF UNDERGROUND STORAGE TANKS**

**COMPLIANCE GUIDANCE DOCUMENT - 112**

**EFFECTIVE DATE - July 29, 1996  
(REVISION DATE - July 19, 1999)**

**RE: REQUIREMENTS FOR TANK AND LINE TIGHTNESS TESTING**

*Rule 1200-1-15-.04(3)(c) states the following: **Tank tightness testing.** Tank tightness testing (or another test of equivalent performance) must be capable of detecting a 0.1 gallon per hour (gph) leak rate from any portion of the tank that routinely contains petroleum while accounting for the effects of thermal expansion or contraction of the petroleum, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.*

*Rule 1200-1-15-.04(4)(b) states the following: **Line tightness testing.** A periodic test of piping may be conducted only if it can detect a 0.1 gallon per hour leak rate at one and one-half times the operating pressure.*

**INTRODUCTION**

The two types of tightness tests are volumetric and non-volumetric. Non-volumetric methods report results only as "Pass" or "Fail," not a leak rate. An example of a non-volumetric method is the use of introducing a "tracer" compound into the UST system. This method detects releases by external monitoring for the presence of the tracer.

Volumetric methods measure the change in product level over time. Variables, such as product temperature changes, can cause product level fluctuations. Volumetric methods are a quantitative analysis and directly measure leak rates in gallons per hour. The application of pressure (positive or negative for tanks only) may be used as a component of a volumetric test.

Line tightness tests may be conducted at the same time as the tank tightness test or tested individually. Positive pressure is often used during line tightness testing, except for volumetric and tracer tests. Negative pressure should not be used on product lines.

## REQUIREMENTS FOR TANK AND LINE TIGHTNESS TESTING

All equipment used to perform tank and/or line tightness tests must be properly calibrated, operated, and maintained in accordance with the equipment manufacturer's specifications. The tightness test may give a false alarm or fail to detect a release. Any leak that is discovered must be reported to the Division within 72 hours.

### Tank Tightness Testing

A tank tightness test must be capable of detecting at least a 0.1 gph leak rate. The test method must have a probability of detection of at least 95% and a probability of false alarm of 5% or less. At installation, the entire tank must be tightness tested, including the ullage space. All other tightness tests must test the portion of the tank that routinely contains product. "Routinely" means the highest product level since the last required tightness test supported by documentation.

Automatic Tank Gauging (ATG) systems may be used to conduct periodic tank tightness testing (excluding lines) if the following requirements are met: the ATG must be permanently installed in the UST; the ATG must be capable of performing a 0.10 gph leak test with a probability of detection of at least 95% and a probability of false alarm of 5% or less; and the ATG must be third party certified.

If an owner/operator uses an ATG to meet periodic tightness testing requirements, one of the following conditions must be met:

1. Conduct an underfill tank tightness test with the ATG in conjunction with an ullage test for the unfilled portion of the tank. These tests must be conducted with no change in product level. The tank must be idle during the test; or
2. The ATG must test the tank at the maximum capacity allowed by the overfill device; or
3. Conduct an underfill tank tightness test with the ATG at the highest level the tank has held product for last twelve months. Inventory records **must** be provided to determine the maximum level.

If an owner/operator uses an ATG to meet tightness testing requirements at new tank installation, release investigations, upgrades, and repairs, the tank must be tightness tested following items 1 or 2 above. The product piping must be tested separately to satisfy the tightness test requirement.

### Line Tightness Testing

A line tightness test must be capable of detecting at least a 0.1 gph leak rate at one and one-half times the operating pressure **from any portion of the UST system piping (including above ground portions of piping) that is capable of containing petroleum.** The test method must have a probability of detection of at least 95% and a probability of false alarm of 5% or less.

If a tightness testing method is capable of detecting a release rate less than 0.1 gph, then that release rate becomes the performance standard for the method. If a tightness testing method is capable of detecting a release rate of 0.05 gph or less with a 95% probability detection and a probability of false alarm of 5% or less, and the results indicate a release, the results are considered a confirmed release and must be reported to the Division within 72 hours.

## **REPORTING AND RECORDKEEPING**

If the results from any tightness testing indicate the tank and/or lines may have had a release of petroleum, then the Division must be notified within 72 hours of a confirmed release. Owners and/or operators must take immediate action to prevent any further release of the petroleum into the environment, and take immediate action to identify and mitigate fire, explosion, and vapor hazards. Owners and/or operators must repair, replace, or upgrade the UST and/or piping, and begin corrective action in accordance with *Rule 1200-1-15-.06* if the test results for the system, tank, or delivery piping indicate that a leak exists.

The results of the most recent tightness testing must be maintained by the owner/operator for inspection by the Division.

Records of all calibration, maintenance, and repairs of release detection equipment permanently located on-site must be maintained for at least one year after the servicing work is completed. Any schedules of required calibration and maintenance provided by the release detection equipment manufacturer must be retained for five (5) years from the date of installation. Note: Records of UST system repairs must be maintained for the life of the UST system.

Records must be kept at the UST site and be immediately available for inspection by the Division, or at a readily available alternative site and be provided for inspection to the Division upon request.

The State of Tennessee does not certify proficiency of any tank and/or line tightness tester, nor does it endorse any particular methodology. The owner and/or operator must ensure that the methodology used is capable of detecting a release rate of 0.10 gph.